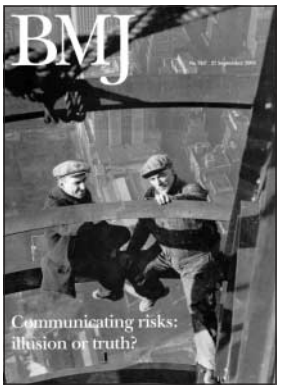
Prognosis for South Asian and white patients with heart failure in the United Kingdom: Counterintuitive findings on heart failure in South Asians may be artefactual

Letters

Communicating risk

We as doctors are not alone

Editor—Risk is a crucial part of current medical practice, as clarified in the editorials by Edwards, Godolphin, and Thornton.[1–3] It is a subject that we all have to deal with day to day, and knowing that others are grappling with these difficult ideas is refreshing. The debate, however, needs to be widened further.



As medical practitioners we are not alone in facing uncertainty and risk. Everyone involved in decision making faces the same problem. Whether it is the risk posed by an Iraqi regime headed by Saddam Hussein, the likelihood of a large meteorite striking the earth, or the chances of an Intercity 125 crashing, everyone is confronted with uncertainty and risk.

The debate on risk needs to be taken beyond the confines of medical journals and into the general media, the House of Commons, and school classrooms. Only when the concepts of risk and uncertainty become familiar to the public at large can we as doctors hope to have an informed discussion with people who come to us asking for advice.

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Competing interests: None declared.

1 Edwards A. Communicating risks. *BMJ* 2003;327:691-2. (27 September.)
2 Godolphin W. The role of risk communication in shared decision making. *BMJ* 2003;327:692-3. (27 September.)
3 Thornton H. Patients' understanding of risk. *BMJ* 2003;327:693-4. (27 September.)

Compulsory measures can work

Editor—Thank you for devoting an issue of the *BMJ* to the important topic of communication and public perception of risk. As a public health doctor, I have long puzzled over the apparent dissonance between statistical and public interpretation of risk.

Risks imposed by others may be less acceptable than risks under individual control. In the examples covered by Bellaby,[1] injuries to child passengers could be perceived by parents as under their own control. Measles, mumps, and rubella vaccination[2] and variant Creutzfeldt-Jakob disease are, however, perceived as imposed by authority.

When comparing the risk of death from smoking and air travel, statistics tell us that air travel is incredibly safe and that smoking is not. Plane crashes induce enormous public fear, yet some 340 jumbo jets would have to crash every year to equal the toll from smoking in the United Kingdom. The media, and hence the public, seem more frightened by unusual and immediate events. Smoking is an every day occurrence and takes many years to kill. Plane crashes are rare and happen in a matter of hours after take off.

Bellaby argues that in a post-war democracy, compulsion cannot work and concordance through two way communication is the only way forward. Although concordance is preferable, compulsion can work well: seat belt legislation. After it was introduced in 1988 this compulsory, effective health measure did not generate mass riots or failed compliance.[3–5] Research into the above issues could contribute to the implementation of effective public health programmes, through better communication, in today's Britain.

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The views expressed here are those of the author and do not necessarily represent the views or policies of Shropshire and Staffordshire Health Authority.

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1 Bellaby P. Communication and miscommunication of risk: understanding UK parents' attitudes to combined MMR vaccination. *BMJ* 2003;327:725-8. (27 September.)
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Patients often have complex understanding of risk

Editor—Why do doctors make such heavy weather of risk? The discussion of risk assessment and communication still slips into patronising patients and oversimplifying issues.[1] We think that individual decisions are almost always reasoned and that patients often have more complex understanding of risk than their doctors.

There are two dimensions to understanding health risks from a citizen's perspective: their estimation of the probability and impact of any action or inaction, and their position on a spectrum from conformist to dissenting attitude.

Driving children to school does expose them to the risk of road crashes, but the probability of this happening is decreasing as the volume of traffic rises and the rate of serious crashes falls. The impact of accidents can be reduced by individual action (careful driving), technological innovation (safer cars), and social measures (traffic calming).

Similarly, the possibility of a connection between the vaccine for measles, mumps, and rubella and autism is understood as a risk of a highly unlikely event that will have a profound impact, whereas measles, mumps, and rubella will have a low impact, despite being increasingly likely.

An emerging conception of the fit body emphasises that the immune system (if well brought up) will respond flexibly to challenge, without need for potentially hazardous immunisation. This new common sense about health emphasises autonomy and responsibility, and resonates with conventional wisdom about personal and economic flexibility. What alternative common sense can *BMJ* readers offer? Herd immunity is hardly an enticing idea for robust individualists.

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1 Bellaby P. Communication and miscommunication of risk: understanding UK parents' attitudes to combined MMR vaccination. *BMJ* 2003;327:725-8. (27 September.)

Journalists take note

Editor—Gigerenzer and Edwards provide us with a succinct summary of everything that is wrong with communicating risk both within the medical profession and to the public at large.[1] What is more, they suggest comparatively easy ways of improving the current sad state of confusion and misunderstanding, by using natural frequencies or absolute risks whenever possible, rather than relative risks alone.

My concern is that the public invariably gets its medical information from the media first, and that journalists who scan the medical press often clearly do not understand the statistics that they are quoting. Particularly with the results of drug trials, the relative risk reduction is quoted (as it is the figure which looks the most impressive) without any reference to natural frequency or absolute risk. Relative risk has very little meaning unless it is framed by the natural frequency of the event considered.

This problem was apparent with the splash headlines recently produced for hormone replacement therapy as a result of the "million women study"—newspapers referred to combined hormone replacement therapy doubling the risk of breast cancer, without saying what the risk was. Figures for a worst case scenario would be helpful. For example, "At the age of 60 the risk of breast cancer in a woman who has never taken hormone replacement is 3.8 for every 100 women: for a woman of 60 who has been taking combined hormone replacement for 10 years the risk increases to 5.7 in 100 women." Adding the positive frame to these figures (that 94.3 in 100 women who had taken hormone replacement for 10 years did not get breast cancer) also helps clarify the risk.

Maybe it also helps clarify the recent report in the newspapers that despite the widespread retreat from hormone replacement therapy in the public at large, 80% of women consultants continue to take it while being fully aware of these absolute risks.

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1 Gigerenzer G, Edwards A. Simple tools for understanding risks: from innumeracy to insight. *BMJ* 2003;327:741-4. (27 September.)

Journalists have responsibility to report risks in context

Editor—Easton discussed health risk reporting in the media.[1] A lot can be learnt about people's perceptions of risk by examining lottery play. This in itself may have implications for how journalists report risk probabilities in media settings.

The probability of winning lottery prizes are the basic risk dimensions that may help determine whether a person gambles on a particular activity in the first place. The ordinary "social gambler" probably does not think about the probability of winning. What most people will concentrate on is the amount that could be won, rather than the 1 in 14 million probability of winning.

How probability operates is generally not understood. Some of the general public seem not to believe that the probability of the numbers 1, 2, 3, 4, 5, and 6 being picked from the 49 balls is equally as likely as any other sequence of six numbers. Some also believe that future predictions can be based successfully on previous draws.

People tend to overestimate positive outcomes and underestimate negative ones. This may have implications for reporting health risks in the media. For example, if someone is told they have a one in fourteen million chance of being killed on any particular Saturday night they would hardly give it a second thought because the chances of anything untoward happening are infinitesimal. However, given the same probability of winning the National Lottery, people suddenly become over optimistic.

The public's understanding of risk probability could be improved. However, journalists still have a responsibility to report risks in context. Too many reports seem to say, for example, "Coffee drinkers are three times as likely to develop X" while omitting to point out that the risks are still infinitesimal.

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1 Easton G. Reporting risk—that's entertainment. *BMJ* 2003;327:256. (27 September.)

Doctor's recommendation is decision making in uncertain conditions

Editor—In his editorial Edwards discussed the communication of risk.[1] Many times in health care decisions must be made under conditions of uncertainty, such as choosing the type of breast cancer surgery when the staging of the disease has yet to be confirmed.

Under such circumstances we have found that Chinese women facing choice between mastectomy and lumpectomy lack sufficient information on risks and outcomes and, as such, tend to use an intuitive rather than rational decision making approach.[2 3] In the absence of clear outcome data, these women want their surgeon to make a clear recommendation about a preference for treatment. Such a recommendation may be being used as an "experience" proxy for lack of risk estimation.

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But does it work, Doctor?

Editor—A theme issue of the *BMJ* urged practitioners to communicate risk, and share decision-making with their patients, but this is not always straightforward. Godolphin says that there are comparatively few medical problems for which good risk information is available.[1] I would add that, even when there is substantial research, the findings do not always answer those questions most relevant to patients.[2 3]

We examined research conducted into the available treatments for menorrhagia, in the course of designing a decision aid to support treatment decisions in our current randomised controlled trial (MENTIP: menorrhagia, treatment, information, and preferences). The studies included five Cochrane reviews, five other reviews, 17 randomised controlled trials, and six cohort studies.

Even with all this available evidence it was still remarkably difficult to answer the simple question from patients, "Does it work, Doctor?" Although menorrhagia is defined objectively as menstrual blood loss of greater than 80 ml, the actual experience of symptoms is highly variable.[3] Many research studies reported treatment outcomes in terms of percentage change in menstrual blood loss, but percentage reduction would mean different things to different women and may not be a good measure of the perceived benefit of treatment.

Perhaps it would be helpful if researchers designing randomised controlled trials of treatments, for any condition, could include, among their objective outcomes, some more global, patient centred outcomes such as "satisfaction with treatment," "will continue with treatment," or "symptoms better." This would help us answer the patient's questions, including "Does it work, Doctor?" and "What's the evidence for that, Doctor?"

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1 Godolphin W. The role of risk communication in shared decision making. *BMJ* 2003;327:692-3. (27 September.)
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Drug sales in four European countries still differ

Editor—The box shows, by value, the top selling pharmaceutical products that are common to Italy, France, Germany, and the United Kingdom. In 1992,[1] 1996,[2] and 2001 few products were prescribed in all four countries. Nineteen active substances were common to three countries, 17 to two countries, and 63 were on only one country's list.

Several classes of drugs were represented in all four countries but with different products. For example, angiotensin converting enzyme inhibitors were prescribed as enalapril in Italy, lisinopril in the United Kingdom, and ramipril in Germany and France. Selective serotonin reuptake inhibitors were paroxetine and sertraline in Italy, the United Kingdom, and France; amoxicillin was common in Italy, the United Kingdom, and France, but no antibiotic featured in the top 50 in Germany. The preferred fluoroquinolone was ciprofloxacin everywhere but in France.

In Italy several antibiotics stand out—ceftriaxone, clarithromycin, and azithro-

Popular drugs common to Italy, the United Kingdom, Germany, and France

1992
Omeprazole
Simvastatin
Ranitidine
Nifedipine
Enalapril
Captopril
Aciclovir

1996
Omeprazole
Simvastatin
Amlodipine
Ranitidine
Captopril

2001
Omeprazole
Simvastatin
Atorvastatin
Amlodipine
Ciclosporin

mycin—as do three benzodiazepines, bicalutamide, tamsulosin, and triptorelin (for prostate cancer). In the United Kingdom the non-steroidal anti-inflammatory drugs were represented by morniflumate; goserelin was the preferred drug for prostate cancer; and the list included two epilepsy drugs (lamotrigine and gabapentin) and the migraine drug sumatriptan.

Germany has a large market for omeprazole, pantoprazole, and esomeprazole; nadroparine; and certoparin. Also included are filgrastim, a granulocyte colony stimulating factor; glimepiride, a hypoglycaemic agent; disodium pamidronate for osteolytic lesions induced by cancer metastases; and mirtazapine, a presynaptic α-2 noradrenergic antagonist, for depressive illness.

In France fenofibrate, a hypocholesteraemic agent, competes with the statins. Cefpodoxime and roxythromycin predominate among the antibiotics, buprenorphine was the preferred analgesic, and gliclazide was the bestseller for type 2 diabetes. Donepezil, for Alzheimer's disease, and ribavirin for hepatitis C are other peculiarities of the French market.

Over the past 10 years the quality of drug expenditure has improved because the number of drugs with insufficient evidence of efficacy has dropped in all four countries: from 25 in 1992 to 11 in 1996 and 9 in 2001.[1 2]

European efforts to establish a centralised procedure and common information on approved drugs in the past 10 years have not unified drug use. Manufacturers' promotional activities and doctors' attitudes, rather than differences in disease, are still the main factors governing the pharmaceutical market.

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1 Garattini S, Garattini L. Pharmaceutical prescriptions in four European countries. *Lancet* 1993;342:1191-2.
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Real time assay of Aspergillus should be used in SARS patients receiving corticosteroids

EDITOR—No consensus currently exists on treatment of the severe acute respiratory syndrome (SARS). Wong et al reported that all patients with SARS received broad spectrum antibiotics and a combination of ribavirin and prednisolone.[1] Intravenous methylprednisolone at high dosage was used in patients with respiratory distress or progressive consolidations in a chest radiograph.

However, the treatment of SARS with ribavarin and corticosteroids remains controversial.[2] Corticosteroids are administered to suppress a possible cytokine storm, which may worsen the lung injury caused by the infectious agent.[2] But using corticosteroids with possibly ineffective antiviral agents in patients with virus induced pneumonitis can be hazardous.[2]

If corticosteroids are administered doctors must always be aware of complications such as superinfections with Aspergillus,[3] a known complication in any patient receiving corticosteroids.[4] Patients with SARS receiving corticosteroids should therefore be monitored for aspergillosis.

Since Aspergillus usually grows slowly on culture (taking up to six days) and is characterised by low sensitivity, we advise introducing an assay using amplification by the polymerase chain reaction, performed in real time, to detect 18SrRNA Aspergillus specific sequences in specimens obtained by bronchoalveolar lavage. Such an assay should be used in association with galactomannan antigen detection by enzyme linked immunosorbent assay (ELISA), as described by Sanguinetti et al.[5]

This promising method for diagnosing aspergillosis is highly sensitive, fast, specific, and non-invasive. It is certainly less traumatic than lung biopsy.[4 5]

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Competing interests: None declared.

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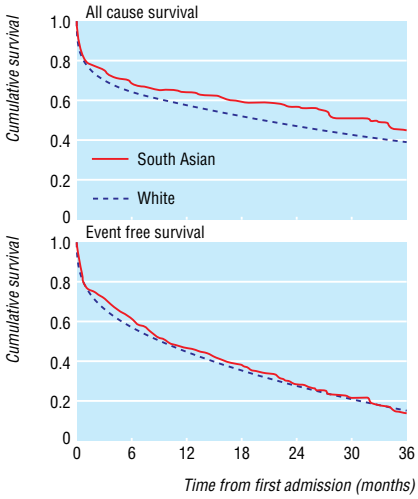
Prognosis for South Asian and white patients with heart failure in the United Kingdom



Survival model for South Asian and white patients in cohort of new cases diagnosed with heart failure in hospital

Counterintuitive findings on heart failure in South Asians may be artefactual

EDITOR—Blackledge et al recognise some of their findings as counterintuitive—for example, a huge excess of hospital admissions for heart failure in South Asians and yet a better outcome.[1] Such results could be artefactual.[2]

They use cases from 1998 to 2001 but the population in 1991. Were the ethnic codes used in hospital data the same as those used in the 1991 census, and were the populations called South Asian the same in the numerator and denominator? Table 1 shows that 85% of South Asian patients lived in the most deprived areas (Q5), compared with 38% of white patients. Figure 1 shows an age adjusted ratio for heart failure admission of about 2.8 in men and 4.3 in women, in apparent contradiction to the figures given in the abstract (3.8 and 5.2). There are typographical errors in table 2.

We offer three alternative, testable explanations detailed in our electronic response.[3]

Firstly, South Asians' excess of heart failure out of proportion to coronary mortality or morbidity[4] may be an artefact. For example, South Asians live in the inner city close to the local hospitals, while white patients are scattered across the city so may be less likely to be admitted to hospital with heart failure or more likely to be admitted outside Leicestershire.

Secondly, the better outcome in South Asians results from residual confounding by age.

Thirdly, the better outcome in the most deprived quintile reflects the high proportion of younger South Asians, with incomplete control of ethnic group and age as potential confounding factors.

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1 Blackledge HM, Newton J, Squire IB. Prognosis for South Asian and white patients newly admitted to hospital with heart failure in the United Kingdom: historical cohort study. *BMJ* 2003;327:526-30. (6 September.)
2 Bhopal R. *Concepts of epidemiology*. Oxford: Oxford University Press, 2002.
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Deprivation gradient in mortality should not be dismissed as artefactual

Editor—Blackledge et al report that, counterintuitively, socially deprived patients with heart failure have a better all cause mortality risk.[1] This contradicts a large previous study in the United Kingdom showing a clear socioeconomic gradient in mortality risk favouring the least deprived patients.[2]

Blackledge et al suggest that their finding may be an artefact of the deprivation index they used (index of multiple deprivation 2000). However, misclassification error resulting from the use of any ecological deprivation index would influence results towards parity rather than produce a clear socioeconomic gradient. Although the results are significant only for the most deprived group, a test for trend using the deprivation score as a continuous variable is likely to have produced a significant result and could have been more informative.[3]

As the authors state, adverse health outcomes are concentrated in the elderly population subgroups of any given geographically defined population. Nevertheless, area based deprivation indices for the United Kingdom consistently predict adverse health outcomes at the individual level.[4]

An alternative hypothesis is that the observed prognostic variation might reflect differences in the cause of heart failure in different deprivation groups. The more deprived groups may contain comparatively more patients with heart failure due to valve disease, hypertension, alcoholism, and arrhythmias and comparatively fewer with coronary artery disease, which has the poorest prognosis.[5] The exact causes of the socioeconomic differences in mortality observed in this study merit further investigation and should not on current evidence be dismissed as artefactual.

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1 Blackledge HM, Newton J, Squire IB. Prognosis for South Asian and white patients newly admitted to hospital with heart failure in the United Kingdom: historical cohort study. *BMJ* 2003;327:526-30. (6 September.)
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Authors' reply

Editor—Population estimates from the 1991 census—the only data available to us—could introduce error in calculating age standardised rates and ratios, particularly for subpopulations with differing age structures. Using 2001 census data, we found that admission rates in the South Asian population were more than twofold higher for both men and women.

The reason for the higher standardised admission rates for heart disease for the city is debatable.[1] Our system captures all hospital admissions for the population of Leicestershire, irrespective of the location of the admission. Missing out of county data could not have been a source of error.

We are confident of the validity of assignment of ethnic group as hospital codes were validated for all cases in the survival cohort. Age was a significant predictor of mortality, and due care was taken to obtain the best fitting model. We recognise that severity of heart failure at admission and details of clinical management will affect survival, but routine data do not capture this information.

We agree that the relation between deprivation and heart failure survival is puzzling. We are confident that categorising the index is valid. In keeping with published data, modelling all cause survival with the index gave an estimated hazard ratio of 0.93 (95% confidence interval 0.88 to 0.98) and a 7% improvement in survival between quintiles 2-4 and 1 (least deprived) and a 14% improvement between quintiles 5 and 1.

That coronary heart disease is less prevalent in the most deprived groups seems unlikely. Indeed 23% of those from the least deprived and 25% from the most deprived cohorts had such a previous hospital diagnosis.

The impact of social disadvantage measures on survival in heart failure has been little investigated. MacIntyre et al showed a 6-10% increase in hazard ratio in the most deprived areas.[2] A life course approach to determining patients' social status could have given us different results.[3 4] However, our results are important in showing the complexity of the relation between social disadvantage and how it is measured.

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Adherence to advance directives

GMC's advance directive is commendable

Editor—Thompson et al's article on adherence to advance directives is a telling exploration of an increasingly relevant issue.[1] The vignette they constructed was comprehensive and robust, leaving no reasonable person in any doubt about the nature and severity of conditions for which the patient would refuse intervention.

The arguments for treating the patient in the face of such a clear instruction seem to amount to no more than seeking loopholes, or high handedly insisting that doctors know best. Both sit uneasily in an era when doctors call for patients to take more responsibility for their illnesses.

Some of the variation in adherence to patients' wishes which they identify may be because, until recently, there was a perceived lack of explicit guidance on what doctors are to do when faced with what, in the United Kingdom, is a contemporary development.

The General Medical Council has recently produced thorough guidelines that intensivists have found useful.[2 3] These say that any valid advance refusal is legally binding and must be respected when it is applicable to the patient's present circumstances and when there is no reason to believe that the patient has changed his or her mind.

In contrast, doctors may be lulled into a false sense of security if they take at face value the conclusion of Thompson et al that successful prosecution is unlikely if an advance directive is ignored. The guidelines remove much room for manoeuvre clinicians once thought they had when following patients' instructions. The GMC has produced a compelling advance directive itself, which is to be commended to all those involved in making such decisions.

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1 Thompson T, Barbour R, Schwartz L. Adherence to advance directives in critical care decision making: vignette study. *BMJ* 2003;327:1011-4. (1 November.)
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Quality of life matters

Editor—I am disturbed by the implication that a sizeable minority of the participants in the study by Thompson et al would

disregard an advance directive.[1] Surely the reason for prescribing active treatment in the scenario presented is that there is some doubt about whether the conditions covered by the directive apply.

Decisions such as this are likely to be presented to doctors with increasing frequency, often in an emergency context in which the decision has to be made without previous knowledge of the patient. In this situation the family, particularly those in regular contact, may be very helpful in interpreting the patient's wishes, although it must be borne in mind that relatives may have their own financial or emotional agenda.

The decision might lie with a doctor who knows the patient well and who may even have countersigned the advance directive. In such a case his or her knowledge will guide the decision making. However, with an eight year interval and a move to a nursing home, together with increased mobility among general practitioners, this is unlikely. This is a grey area, entry to which none can relish but which must be faced.

A secondary issue is how much influence antibiotic administration has on the outcome of pneumonia in elderly patients. The scenario shows that it is considerable: my experience over 30 years shows otherwise.

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Maybe doctors do not always know best

Editor—The study by Thompson et al was a timely examination of health professionals' attitudes when the wishes of patients do not match their own.[1] Even after the recent judgment in the case of Miss B it seems that many of us are simply not prepared to allow patients to refuse treatment they do not want.

In the case described by Thompson et al the competently expressed wish of the patient may be disregarded only if there is evidence that her wishes have changed since the directive was signed. If not, once practitioners are satisfied that the clinical circumstances match those for which the directive provides (and this is moot), then there is no moral, ethical, or legal basis for disregarding her wishes.

Do we need further lawsuits before we collectively accept that our role should not include a paternalistic contempt for what our patients want?

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Competing interests: None declared.

1 Thompson T, Barbour R, Schwartz L. Adherence to advance directives in critical care decision making: vignette study. *BMJ* 2003;327:1011-4. (1 November.)

Advance directive needs to include additional elements

Editor—Those of us who have made advance directives can only be dismayed and concerned by Thompson et al's assumption that there will always be ambiguity.[1] Firstly, doctors can strangely assume that patients might aspire to spend their last days demented in a residential home. Secondly, this assumption is enough to justify giving an antibiotic to prolong everyone's agony, mainly that of the patient.

Prescribing an antibiotic is the easy option; many of us have done it. I will always remember the withering look coupled with the remark "Why did you do it?"of a most distinguished, very elderly lady to whom I administered a parenteral antibiotic when she was delirious with pneumonia. She recovered and eventually developed dementia. There was no alternative to the antibiotic: there was no advance directive. Higgs commented in the *BMJ* that pneumonia, the old person's friend, may be dismissed with a wave of the prescribing pen—but what if the old person wishes the friend to call?[2]

What can be done to counteract the ambiguity? The hypothetical advance directive, although apparently fully comprehensive and perhaps thought to be irrefutable, should additionally include:

- A statement of general beliefs and aspects of life that the person values. My own statement is long and detailed and includes the hope that I will not end up a burden to my carers, and that I will not have inflicted on me a meaningless struggle against unacceptable mental or physical disability by my doctors
- A statement naming a proxy who would help the doctors with interpreting the advance directive.

If my directive with these additions is still ignored I hope that my relatives would not hesitate to sue for assault or negligence.

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1 Thompson T, Barbour R, Schwartz L. Adherence to advance directives in critical care decision making: vignette study. *BMJ* 2003;327:1011-4. (1 November.)
2 Higgs R. Living wills and treatment refusal *BMJ* 1976;295:1221-2.

Quality of life may be important in advance directives

Editor—In the last paragraph of their article Thompson et al highlight the fact that the hypothetical advance directive makes no reference to the quality of life.[1] The reciprocal nature of the quality of life is seldom considered, usually only an individual perspective is taken. Western society has focused increasingly and now almost exclusively on the individual with regard to gratification and now to life itself.

Monsignor Ronald Knox précised Bishop Berkeley's 18th century philosophy with the following limerick.[2]

There was a young man who said "God
I find it exceedingly odd
that this very tree
Should continue to be
When there is no one about in the quad"
Answer
"Young man your question is odd.
I am always about in the quad.
And that's why this tree
Continues to be"
Signed by, yours faithfully, God.

If one takes a humanist perspective, the individual can be represented by the tree having significance or quality by virtue of another's presence in the "quad."

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1 Thompson T, Barbour R, Schwartz L. Adherence to advance directives in critical care decision making: vignette study. *BMJ* 2003;327:1011-4. (1 November.)
2 Andrews R, Biggs M, Siedel M. *The Columbia world of quotations.* New York: Columbia University Press, 1996.

Radiographic results are still not routinely reported

Editor—Many clinicians will be surprised to learn that hospitals in the United Kingdom do not routinely report the results from all plain radiographs before filing them. A consultant radiologist recently told me that his department does not report "a significant proportion of radiographs" because there are not enough resources to do so. They are "working on a solution and hope that over the next two or three years this practice will have changed." His department is in a university teaching hospital and has 20 consultant radiologists.

The Royal College of Radiologists has been concerned by poor standards for some years.[1] In its audit of the reporting of inpatient plain radiographs more than half of the hospitals did not report all plain inpatient radiographs, and 3% of hospitals did not report any. In another audit of the reporting of radiographs requested by general practitioners the standards set by the college were met by only a minority of departments.

Although the regulations governing medical exposure to ionising radiation require the clinical evaluation of each medical exposure to be recorded,[2] radiology departments often fail to do so. In addition, clinicians may not have robust systems for detecting unreported radiographs that they have requested. The inevitable consequence is that many patients are exposed to inappropriate care, the risks of radiation without any gain, and the possibility of further unnecessary radiation from more sophisticated tests.

These problems of risk management, breaches of European Union directives, and matters of clinical governance were clearly identified three years ago by the Royal College of Radiologists. Many clinicians seem unaware that these problems exist and that the solutions have not been implemented by all hospital trusts.

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1 Board of the Faculty of Clinical Radiology, Royal College of Radiologists. *Two national audits of radiographic reporting services.* London: Royal College of Radiologists, 2000.
2 Department of Health. *Ionising radiation (medical exposure) regulations.* Norwich: Stationery Office, 2000. (IS 1999/3232.)